

eruption is going on, but if so, must not the moon have an atmosphere? Could combustion take place without oxygen? Would the smoke—the carbonic acid and gas—rise without some heavier gas, like atmospheric air, to rise in?”

—In the Grisons a fall of red snow, to the depth of three inches, has taken place. The fall lasted about two hours, and was succeeded by white to double that depth. The phenomenon is not uncommon, and is due to the presence of a microscopic mushroom, the *protococcus nivalis*.

—At one season the earth parts with its warmth by radiation to an open sky—receives, at another, an immoderate heat from the unobstructed rays of the sun. Hence the climate becomes excessive, and the soil is alternately parched by the rigors of winter. Bleak winds sweep unresisted over its surface, drift away the snow that sheltered it from the frost, and dry up its scanty moisture. The precipitation becomes as irregular as the temperature. The melting snows and vernal rains, no longer absorbed by a loose and bibulous and vegetable mold, rush over the frozen surface and pour down the valleys seaward, instead of filling a retentive bed of absorbent earth, and storing up a supply of moisture to feed perennial springs. The soil is bared of its covering of leaves, broken and loosened by the plow, deprived of the fibrous rootlets which held it together, dried and pulverised by sun and wind, and at last exhausted by new combinations. The face of the earth is no longer a sponge, but a dust heap, and the floods which the waters of the sky pour over it hurry swiftly along its slopes, carrying in suspension vast quantities of earthy particles, which increase the abrading power and mechanical force of the current, and augmented by the sand and gravel of falling banks, fill the beds of the streams, divert them into new channels, and obstruct their outlets. The rivulets, wanting their former regularity of supply, and deprived of the protecting shade of the woods, are heated, evaporated, and thus reduced in their summer currents, but swollen to raging torrents in autumn and in spring. From these causes there is a constant degradation of the uplands, and consequent elevation of the beds of water courses and of lakes by the deposition of the mineral and vegetable matter carried down by the waters. The channels of great rivers become unnavigable, their estuaries are choked up, and harbors which once sheltered large navies are shoaled by dangerous sandbars. The earth, stripped of its vegetable glebe, grows less and less productive, and consequently less able to protect itself by weaving a new network of roots to bind its particles together, a new carpeting of turf to shield it from wind and sun and scouring rain. Gradually it becomes altogether barren. The washing of the soil from the mountains leaves bare ridges of sterile rock, and the rich organic mold which covered them, now swept down into the dark low grounds, promotes a luxuriance of aquatic vegetation that breeds fever, and more insidious forms of mortal disease by its decay, and thus the earth is rendered no longer fit for the habitation of man—*Scientific American*.

—Whatever dispute there may be as to the origin of coal, there can be no valid question that the composition of peat is mainly vegetable. The evidence of this is of a *prima facie* character; for even those varieties which appear to the unaided eye but masses of smooth, oily muck, show, under the microscope, the remains of minute mosses, which flourished and died through countless generations, and sank below the water which sustained and supported them while living.

On many a plain, on lofty table lands, in gorges and valleys, wherever water gathers, from a thousand sources miniature pools or extensive morasses are formed by the water being held stagnant and imprisoned by the solid clay or hard rock beneath.

On the surface of these silent waters confervæ, so minute as to be visible only as a green scum, appear, live their brief life, and sink to the bottom. Others immediately take their places, live and die, until film after film is deposited. In time this very gradual accumulation becomes a palpable mass; not, indeed, until countless generations of these confervæ have lived and died. Particles of sand and stones gather and are held; the decaying roots of adjacent plants, killed by the sluggishness of these waters of death, help the accretion of the mass. It rises year by year until it affords a foothold for water fowl, which add their qualities of guano, and at last it covers the dark waters and forms a peaty mold extending to the surface.

These changes have been passive; but the water still accumulates, and at length becomes aggressive, breaking through the felt-like mass and destroying the daring vegetation that attempts to procure a foothold over the treacherous slime. Below all is the water; next, the black peat, composed of these almost invisible confervæ; then the closely interwoven mummies of roots, which make the surface turf, or peat.

Vast regions of the globe, called by geographers “solid land,” are covered by these peat bogs, or treacherous morasses. The table

lands of the South American Cordilleras; the immense plains of frozen Siberia; about one-tenth of the island of Ireland; large parts of Scotland, Germany, Jutland, Norway; the gorges and valleys of the Alps, an innumerable localities on this continent, are occupied with these moors. Within the limits of the polar circle and under the burning sun of the tropics they exist and increase. They do not rest. Their quiet is only apparent. The slow but sure progression of the moor is insured by the increase of water and the accumulation of decayed and dying vegetation; so that at times the air and gases, imprisoned beneath the tangled network of roots and fibres and the coat of deceptive turf, assert their right and burst all restraints, sending forth streams of black, liquid mire, which overwhelm or destroy all within their reach.

But the silent and almost unobserved action of these peat marshes is not less remarkable. Quietly, gradually, but irresistibly as fate itself, wherever they exist, they exist but to destroy. They undermine the roots of proud forest trees and sink them, still upright, in their miry depths, beyond the reach of sunlight and air. Or, they cut them down and swallow roots, branches, and foliage beneath their insatiable waters.

Water either in motion or at rest is a great destroyer. Where the solid land or dense vegetation does not offer a bar to its aggressions, it comes in to usurp and reign. We have in our recollection one notable instance. In provincial times a large tract in the little State of Rhode Island was a thick cypress or cedar swamp, the resort of innumerable animals as wild as their habitation. The trees were cut down, the vegetation killed by fire, and the waters came in, and now the tract of salt water, called “Hundred Acre Cove,” covers thousands of acres and affords fine fishing grounds, rendezvous of water fowl, and a magazine of fuel and fencing material by its wealth of stumps and roots.

What are commonly known as salt marshes are now or are becoming beds of peat. The accumulation is very gradual, the growth of one season forming a thin layer to be succeeded by another. The rank grasses, rushes, and other water plants and the shrubbery, which retains a precarious foothold on the surface, add to the mass year by year. In time what was a treacherous morass becomes apparently *terra firma*, and more advanced forms of vegetation take the place of the aquatic growth; a forest rises over a marsh. The marsh, however, is still there, and below the roots of the trees is a spongy bed of peat. The sea itself holds in its relentless grasp vast deposits of this substance, destined perhaps hundreds of thousands of years hence, to furnish fuel and light to other races of man. The sea in many places is making encroachments on the land or rather the land is sinking below the sea level. Where, as in the case of the “Hundred Acre Cove,” the barrier to the sea has been removed by human agencies, the ocean has usurped and held domination.

Even beneath the shade of forests growing on solid ground, peat has formed and is in process of formation. The foliage of the trees, with the countless shrubs that grow in dark luxuriance in the impenetrable shade, decay and form layer after layer of soft, slimy substance which becomes in time concreted into genuine peat. Thinning the forest dries the soil, and in time the peat is a dry, fibrous substance, naturally prepared for the use of fuel.—*Id.*

—During the late prevalence of cholera at Vienna, one Dr. Kolb, a prominent physician of that place, subjected the ice-water discharges of his patients to microscopic examination. He has now published the result of his researches, and they are truly remarkable and well worthy the closest attention and scrutiny of the medical faculty. He says that with the greatest magnifying power he could procure, he discovered in the fluid substance millions upon millions of mushroom-like entomistic excrescences, in which he claims to have found the germ of this fearful epidemic. To detect a remedy capable of destroying these “mushrooms” and preventing their growth, he thinks would be the surest specific against the spread of cholera. He had communicated his discovery to Dr. Max Pettenkofer, of Munich, but this distinguished authority on epidemics and disinfectants has not as yet, to our knowledge, given any opinion upon it.—*Exchange*.

*Mr. Rutherford's Celestial Photography.*—Dr. Gould, writing in *Astronomische Nachrichten*, states that Mr. Rutherford, with a photographic object-glass of 11½ inches aperture, has carried his process to such perfection that he readily obtains impressions of stars 8½ mag., provided they are not red. It is easy to obtain the image of a region one degree square.

—A *New Glow-worm, with two Fires*, has been found in the Grand Chaco, Argentine Republic. Wm. Perkins, Esq., F. R. G. S., writes from Rosario, October 20, 1866, to Wm. Bollaert, Esq., F. R. G. S.:—“I think I have made a discovery in natural history, and which you may make known to the scientific world. I found the female of the most extraordinary *Elaterride* ever heard of, at least that I know of. It is a most brilliant glow-worm, one inch and a half long, with two-fires. The body emits a most vivid flame of the ordinary greenish phospho-